

21 April 1960

MEMORANDUM FOR: The Record

SUBJECT : TDY Trip to R & W for Discussions on the  
Rehabilitated System VI

1. The new design of System VI will utilize the principles proposed in the "suggested" System VI submitted by Detachment "B". There will be several further improvements and additions.
2. The following is a band by band description of the proposed System:
  - A. "S" Band -
    1. Bowtie antennas will be utilized, mounted on System I type brackets.
    2. The information amplifier, coax-switch, band-pass filter, and detector will be mounted on a plate which in turn is secured to a "half ATR" rack. The coax-switch will switch R.F., not video (detected signal).
    3. Signals leads will utilize RG 59U coaxial cables. The coax will pass through the bulkheads via a coax connector, not through power cabling.
    4. A "half-ATR" rack will be mounted for future use of an "S" band preamplifier presently under discussion. This rack will be mounted on the "floor" of the nose area, immediately to the rear, and at right angles to, the information amplifier, coax-switch and rack.
    5. Provision for System III in the nose was deemed superfluous since it could always be flown in the left cheek, utilizing the ventral antenna.

B. "P" Band -

The layout of the "P" band equipment will remain approximately the same in the right cheek. The possibility that a heat-sink, in conjunction with the HNB preamplifier, would increase its reliability and tube life was discussed. However, no solid

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agreement was reached. Use of a fan was suggested by Mr. Haywood. Mr. Haywood will investigate further and provide some means of cooling the unit. It was agreed that all R&W preamplifiers must be standardized in regard to noise, tangential sensitivity, dynamic range, etc. When standardized, steps must then be taken to achieve a match between the information amplifier and the preamplifier. R & W will investigate possibility of a logarithmic attenuator, or some similar device to widen the dynamic range of the information amplifier.

C. "X" and "L" Bands -

The hatch area and the bands installed will not be changed to any great degree. The wiring will be simplified as much as possible; all other changes will be mechanical.

3. There are several other new features which were discussed regarding the entire system:

A. A control box will be mounted on the right console in the pilot's compartment. The box will provide:

1. On-Off Switch.  
2. Mode Selection. Left, Right, or Alternate left/right.

3. Height indication of left or right.

The control box will utilize a 1½ inch space.

B. The timer will be of the A-C type and will be mounted on a plate behind the pilot's seat in the spot originally occupied by the AIC-10 dynamotor.

C. All bulkhead plugs will be of the "through" type, so that cables may easily be removed. All connectors will be of the "quick-disconnect" style, similar to those presently used in System VII. Plugs will not be potted. All signal leads will utilize separate coax feed-through connectors and RG 59U cable.

D. All units, including hatch equipment, power supplies, etc., will be mounted with "slide-lock" fasteners to facilitate removal. The slides are to be safety-wired prior to flight.

E. A bench mock-up will be provided for servicing, training,

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etc. It will be composed of an exact duplicate of the Systems wiring in the aircraft, and will have racks for installation of equipment.

F. The junction box will be mounted on the right bulkhead of the Q bay. The primary power will be routed from the aircraft primary power terminals direct to the Systems junction box. Signal leads will be separated and coaxial connectors utilized. The hatch will plug directly into the junction box.

G. The "B" recorder was discussed with Mr. Bill Farnell and his leader. There are several projects under way to improve the recorder reliability. One very promising idea is placement of roller-bearings in the capstan idler drive wheel which results in a marked decrease in flutter. A belt drive and a heavy flywheel for the capstan motor are soon to be tested. R & W also is investigating possibility of obtaining superior governor contacts.

H. Removal of the tube version of the JKC right-left tone indicator and substituting a transistorized version is being considered as a modification for the "B" board.

I. The new recorder was inspected. It looks very good. R & W hopes to get one to the field for trials in June or July, if possible.

J. The new System III, completely transistorized, was also observed. It looks like a fine companion piece for their new recorder.

K. Several module units have been redesigned for System III, and all boards should be rotated back to the factory at the earliest convenient time to take advantage of the increased reliability by factory overhaul.

L. In general, it is felt that the trip to R & W was worthwhile in that several misunderstandings, etc., were cleared away. Mr. Haywood expects a 90 day lag between kit delivery and contract agreement.

[Redacted]  
Electronic Engineer

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